PHIS Info Sheet
ıary Services
ır Epidemiology and Animal Health
VS
January 2009

PRRS Seroprevalence on U.S. Swine Operations

Background

First reported in the United States in the late 1980s, porcine reproductive and respiratory syndrome (PRRS) severely impacts the economic well being of the Nation's swine industry.[1] PRRS causes both late-term reproductive failure and postweaning respiratory disease in swine. In addition, the PRRS virus has a high mutation rate which has made control of the disease difficult.[2]

Although PRRS virus is highly contagious, transmission generally requires direct pig-to-pig contact. However, virulant strains can aerosolize over short distances.[2] PRRS virus also is transmitted indirectly via insects and fomites,[3] and is found in and spread to other pigs by saliva, nasal secretions, urine, feces, needles, and semen.[2,3] Infected animals may shed the PRRS virus up to 157 days post infection,[3] and is found in the blood for up to 23 days post infection.

Reproductive losses among affected sows include premature farrowing, increased abortions, and increased stillbirths/mummies. Affected sows may stop producing milk, resulting in increased preweaning mortality. Live-born piglets infected *in utero* are viremic at birth and are susceptible to secondary bacterial diseases seen in the nursery. Grower/finisher pigs infected with PRRS may experience respiratory disease.[2] Highly virulent strains of virus may cause death losses of 10 percent and higher in sows and growing pigs.[4]

The control of PRRS remains an important topic in animal heath. Control of this disease includes vaccination and proper herd management.[2] Diligent biosecurity including air filtration, careful management of breeding stock immunizations before entry, herd closure, and all-in/all-out pig flow can aid in controlling PRRS on a swine operation.[3]

PRRS prevalence on U.S. swine operations

In 2006, the USDA's National Animal Health Monitoring System (NAHMS) conducted a study on swine health and management practices from a random sample of swine production sites in 17 States* divided into 4 regions. These States represented about 94 percent of the U.S. pig inventory and 94 percent of U.S. pork producers with 100 or more pigs. Overall, 2,230 swine production sites participated in the first interview from July 17 to September 15, 2006.

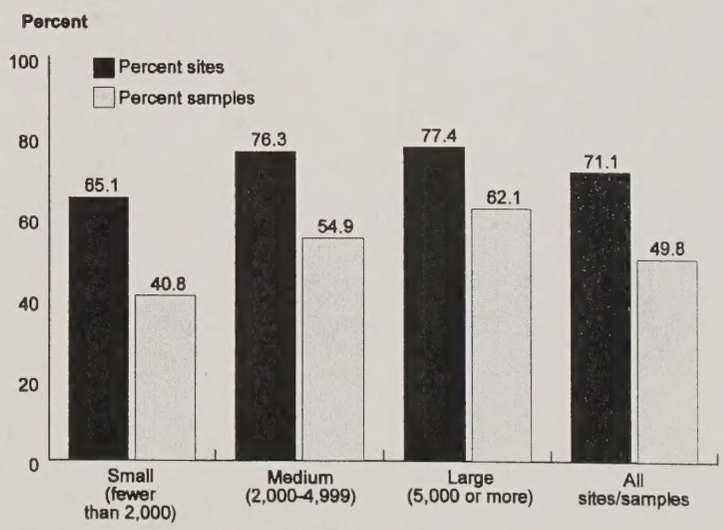
Producers participating in the NAHMS Swine 2006 study had the opportunity to submit up to 35 blood samples from grower/finisher pigs to be tested for antibodies to PRRS virus. From September 5, 2006, through March 15, 2007, 6,234 samples were collected from 185 swine sites and tested using the IDEXX enzyme linked immunosorbant assay (ELISA) test.

Because the ELISA test does not differentiate titers due to field virus exposure from PRRS vaccination, estimates reported here are from unvaccinated grower/finisher pigs only. Of the 6,234 samples tested for PRRS antibodies, 5,793 (92.9 percent) were from 173 sites that did not vaccinate grower/finisher pigs for PRRS virus. These 173 sites were used in all subsequent calculations.

Overall, 49.8 percent of unvaccinated grower/finisher pigs were positive for PRRS virus antibodies and 71.1 percent of sites that did not vaccinate for PRRS had at least one positive sample.

The percentage of sites with at least one sample positive and the percentage of samples positive in unvaccinated herds is shown by herd size in figure 1.

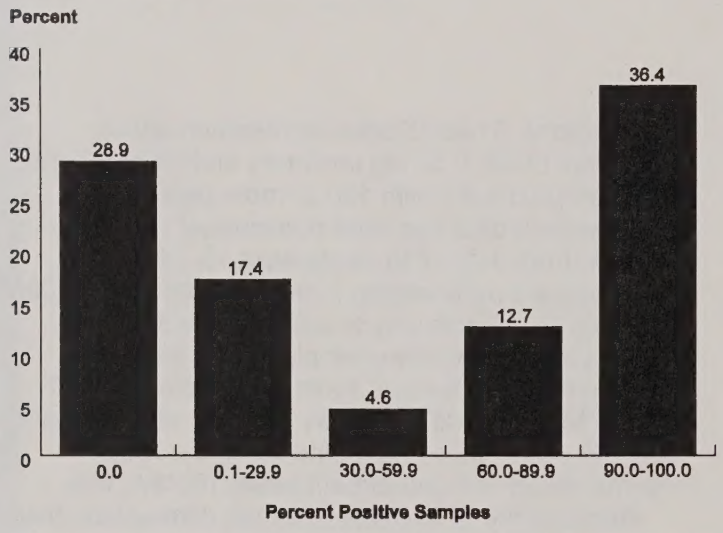
Figure 1. Percentage of Sites and Samples Positive for PRRS Virus Antibodies in Unvaccinated Herds, by Herd Size



* **Regions/States**
North: Michigan, Minnesota, Pennsylvania, and Wisconsin
West Central: Colorado, Kansas, Missouri, Nebraska, and South Dakota
East Central: Illinois, Indiana, Iowa, and Ohio
South: Arkansas, North Carolina, Oklahoma, and Texas

Figure 2 shows that nearly one-half of sites (46.2 percent) had between 0.0 and 29.9 percent of samples positive for PRRS virus antibodies, while 36.4 percent of sites had 90 to 100 percent of their samples positive.

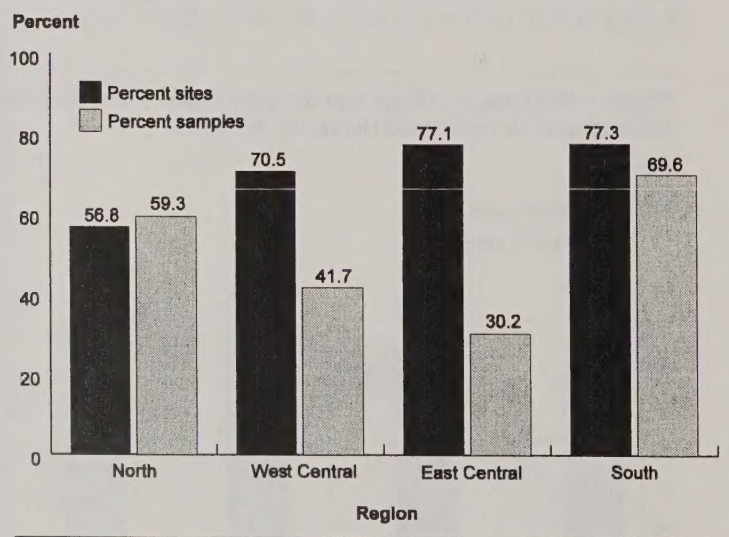
Figure 2. Percentage of Sites by Within-herd Prevalence for PRRS Virus Antibodies in Unvaccinated Herds



PRRS prevalence by region

Figure 3 shows the percentage of unvaccinated sites that were positive for PRRS virus antibodies (had at least one positive sample) and the percentage of positive samples. The East Central and West Central regions had more than 70 percent of sites positive, while less than one-half of the samples were positive.

Figure 3. Percentage of Sites and Samples Positive for PRRS Virus Antibodies in Unvaccinated Herds, by Region



References

1 Neumann, J. Eric, J.B. Kliebenstein, and C.B.Johnson, et al. 2005. Assessment of the economic impact of porcine reproductive and respiratory syndrome on swine production in the United States. *J Am Vet Med Assoc.* 227(3):385-392.

2 Straw, B.E., J.J. Zimmerman, S. D'Allaire, and D.J. Taylor, eds. 2006. In: Diseases of Swine 9th ed. Iowa State University Press, Ames, IA. p. 201-244.

3 Cho, J.G., and S.A. Dee, 2006. Porcine reproductive and respiratory syndrome virus. *Theriogenology* 66:655-662.

4 Zhou, Y.J., X.F. Hao, Z.J. Tian, et al., 2008. Highly virulent porcine reproductive and respiratory syndrome virus emerged in China. *Transbound Emerg Dis* 55:152-164.

For more information, contact:
USDA:APHIS:VS:CEAH
NRRC Building B, M.S. 2E7
2150 Centre Avenue
Fort Collins, CO 80526-8117
970.494.7000
E-mail: NAHMS@aphis.usda.gov
http://nahms.aphis.usda.gov